Problem Statement 1

ONDC Objective

ONDC is on a mission to democratize e-commerce by empowering small and medium enterprises (SMEs), especially from Tier 2, 3, and 4 cities, to join the digital economy. However, the current onboarding process heavily depends on Seller Network Partners (SNPs), leading to inefficiencies, limited reach, and high costs. To address these challenges, we aim to ideate and solve the following problem statement.

In the ONDC framework, Seller Network Partners (SNPs) play a pivotal role. SNPs act as intermediaries, onboarding sellers (SMEs, artisans, and small business owners) to the ONDC network by facilitating catalog creation, compliance checks, and operational setup.

However, SNPs face several operational challenges that limit their effectiveness, impacting the growth of the supply side of ONDC. These challenges also highlight opportunities to improve the system through innovative technological solutions.

Judging Criteria:

1. Innovation: How unique and impactful is the solution?
2. Usability: Is the platform intuitive and user-friendly for SMEs with minimal digital literacy?
3. Scalability: Can the solution be scaled for millions of SMEs across different geographies?
4. Technical Feasibility: Does the solution demonstrate robust and efficient use of technology?
5. Alignment with ONDC Goals: How well does the solution address the objectives of democratizing e-commerce?

Prizes:

- `Winning Team: ₹1,10,000 for each problem statement + Opportunity to collaborate with ONDC on the E-Dukaan project.`
- Special Mention: Certificates of Excellence.

Submission Requirements:

1. All submissions to be submitted on ONDC github link: https://github.com/ONDC-Official/ondc-hackathon-25
2. Primary Research + Onfield Survey
3. A functional prototype or detailed wireframes of the proposed solution.
4. A presentation explaining the user journey, technical architecture, and scalability plan.
5. A demo video (optional) showcasing the solution.
6. Operational plans for activating the market

Problem statements

Problem Statement 1: Global Catalog Registry

Background

In a digital ecosystem like ONDC, catalogs are the foundation for suppliers to achieve digital visibility and transact effectively. ONDC's interoperable and unbundled framework emphasizes the need for a robust, unified approach to catalog creation and dissemination, as there is no single entity responsible for producing or consuming catalogs. However, various network participants face significant challenges that limit seamless catalog management and utilization. Following is a list of some of the critical issues which are being faced by Buyer applications and Seller applications on the ONDC network:

Buyer Apps

1. **Inconsistent User Experience**: Buyer apps struggle to provide a consistent experience due to the lack of a unified catalog framework.
2. **Complex Integration**: Effortless integration and utilization of supplier catalogs remain a challenge.
3. **High Costs and Redundancy**: Processing, storing, and managing catalog elements are expensive and often lead to data duplication.
4. **Limited Pre-Creation Options**: The absence of seed catalogs restricts the ability to create pre-defined experience templates for buyers.
5. **Static vs. Dynamic Features**: No centralized capability to distinguish dynamic features (e.g., prices, availability) from static attributes (e.g., MRP, warranty details).
6. **Catalog Hosting Efficiency**: A cost-effective and scalable system for hosting catalogs is lacking, leading to repetitive processing and inefficiencies.

Seller Apps

1. **Storage Overheads**: High costs for storing structured and unstructured catalog data (e.g., images, attributes, credentials) for both buyer and seller apps.
2. **Catalog Migration Challenges**: Migrating sellers between platforms requires re-creating catalogs from scratch, nullifying previous efforts.
3. **Fragmentation**: A lack of a global or master catalog causes inconsistencies in catalog attributes across platforms and sellers.
4. **Identification Issues**: Limited capacity to uniquely identify catalog items and their variants.

These issues affect user experience and influence consumer purchasing decisions, making it critical to ensure a minimum level of catalog templating. A well-defined catalog infrastructure will enable buyer apps to curate customer experiences seamlessly while optimizing network traffic by bringing catalog resources closer to consumption points.

Hackathon Objective:

Currently, when a buyer application retrieves a catalog based on a search query from an end customer, it anticipates responses from all seller applications that serve the region and offer relevant products or services. This process involves an NxN transaction model, requiring significant computational resources. With the introduction of GCR (Global Catalog Repository), ONDC aims to optimize this process by reducing computational costs. The proposed solution enables buyer applications and seller applications to either pull the catalog for their customers or build and manage catalogs for their respective sellers, thereby transitioning to a more efficient N+N model.

Design and develop a **Global Catalog Registry** that addresses the following key challenges:

1. **Ease of Integration**: Enable automated catalog creation, ingestion, and utilization for all participants.
2. **Consistency**: Establish a standardized catalog structure to minimize variability and processing efforts.
3. **Centralized Storage**: Create a single repository for catalog elements, reducing redundancy without compromising performance.
4. **Seed Catalogs**: Provide initial templates for sellers and seller apps to kickstart catalog preparation.
5. **Multiple Sources**: Allow sourcing of catalog items from diverse avenues while maintaining central storage.
6. **Efficiency**: Minimize storage and processing costs through a centralized, template-driven approach.
7. **Unique Representation**: Ensure catalog items are uniquely identified while allowing sellers the flexibility to customize representations.

This hackathon challenges participants to design an innovative and scalable **Global Catalog Registry** that fosters seamless catalog interoperability, enhances user experience, and optimizes catalog management for all ONDC participants.

Problem Statement 2: Seamless Integration on Open Networks using ONDC protocols

Digital Commerce in the current context

In a platform construct, a buyer and seller need to be on the same platform to be able to transact. In a network construct, the digital commerce value chain is unbundled with buyer side, seller side and logistics are colocated in their respective systems, with interoperable protocols and specifications

- **Centralised Marketplace Platforms**: online marketplace with large consumer bases. Sellers compete alongside other online merchants in the same marketplace. This is suitable for those sellers who want to take advantage of the expanse and reach of such individual marketplaces.
- **Independent Storefront Platforms**: e-commerce platform that allows businesses to build their brand and online storefront including features related to marketing, store management, analytics and third-party integrations to boost the site's functionality. This is suitable for e-commerce sellers looking to develop their own brand.

Hackathon Objective

As a network participant in an open network, it is pertinent that the tech platform of such participants implement all specifications of the protocol including baselined use cases, and enabling other subsidiary features in their respective apps.

While the underlying protocol construct enables a DOFP framework (Discovery, Order, Fulfilment, Post-Fulfilment etc.), each domain has its own set of specifications, and at times, rules as well. Since both the unbundled values chain, viz. Buyer App, Seller App, Logistics Apps need to interpret the incoming payloads, encoded in JSON format, it is an onerous and time consuming task to get integrated on ONDC. Time to integrate varies by tech maturity of the platforms.

In order to overcome this challenge, it is pertinent to have a consistent ONDC library/SDK/Adaptors that can generate a consistent payload interpreted in a similar way across all unbundled value chain as explained above. Following are some of the expected tenets of proposed solution:

- A library/SDK/SaaS based adaptor that can get embedded into existing platforms using any language
- A well defined software specification for the underlying prototype so that it can be picked up and developed into any other language.
- Logical architecture diagram clearly depicting the two side integrations, one with underlying app and other side with ONDC network.
- Description of purpose and usage of technology components used

- Market operationalization plan.

One may use any of the existing open source ecommerce platforms, and create an unbundled framework including a modular ONDC adapter layer. Developers are free to develop plugins for existing e-market players such as below:

- **Shopify**: Simple to use, with drag-and-drop pages, personalised checkout options, and a wealth of instructional videos and guides to get you up and running. There are also numerous ways to grow your business, with thousands of add-ons, plugins, and integrations available in the Shopify marketplace. Globally, Shopify supports over 2 million merchants, with its growth in India reflecting this trend. It holds about 28% of the global e-commerce market, which gives you an idea of how significant its presence is.
- **WooCommerce**: open-source plugin that allows websites built on WordPress to sell products and accept payments, turning WordPress site into an e-commerce project. WooCommerce basically involves everything one needs to get an e-commerce site up and running. It is popular among SMEs and entrepreneurs because of its versatility and ease of use. WooCommerce is super popular with businesses that want more customization, especially smaller brands. Globally, it powers 23% of online stores, and it has a strong base in India due to its flexibility and the fact that it integrates with WordPress.
- **BigCommerce**: BigCommerce is one of the most customizable e-commerce platforms globally. It provides a variety of themes and tools to help create a relevant website for a business. The adaptable system includes lots of security features to protect operations, as well as a variety of analytics to figure out what's working. BigCommerce is not as widely used as Shopify or WooCommerce but is known for its robust features for medium-to-large businesses. It holds about 3.7% of the global market and is growing steadily in India.
- **OpenCart**: OpenCart is a free, open-source eCommerce platform that allows businesses to create and manage online stores. It provides a user-friendly interface, customizable themes, and a wide range of extensions for additional features. It comes with support for multiple payment gateways, languages, and currencies. It is a go-to platform for smaller businesses that want a cost-effective, open-source option. It has around 3.5% of the global e-commerce market, and its use in India reflects its popularity among those who want more control and fewer upfront costs.
- **Magento**: Another option to consider to take businesses online. It is one of the top 5 e-commerce platforms in the world, but one needs to have the technical knowledge to set up our store, that is one needs to have working knowledge of PHP.
- **Vinculum**: Vinculum provides modular SaaS products helping brands to create content once and push it to multiple global sales channels and manage orders, inventory and fulfilment on a real-time basis. Vinculum's omnichannel solution with modules orchestrating real-time view of inventory in stores and warehouses works tirelessly to help sell anywhere, faster even providing integration with leading ecommerce enabling platforms that help in creating an online storefront for sellers.

- **Saleor:** Saleor is an open source ecommerce suite, providing all features of an ecommerce application. Its a python based open source ecommerce platform that can be used to build an ONDC ready solution.

Problem Statement 3: Revolutionizing Onboarding for Kirana Stores

Operational Challenges of SNPs and the Opportunities They Present

1. Cost of Onboarding Dependency:
    - Challenge: SNPs must invest significantly in onboarding sellers, leading to a dependency on ROI-positive sellers. This bias prevents the inclusion of smaller or less lucrative sellers.
    - Opportunity: A self-onboarding platform can eliminate SNP dependency, enabling sellers to onboard directly, reducing costs, and democratizing access to the network.
2. Limited Reach:
    - Challenge: SNPs often lack the resources and networks to reach sellers in Tier 2, 3, and 4 cities or rural areas. This results in untapped potential and inefficiencies in the onboarding process.
    - Opportunity: Technology can enable a bottom-up onboarding approach, making it easier for sellers in remote areas to onboard themselves with minimal assistance.
3. Limited Operational Capability:
    - Challenge: Many SNPs lack the capacity to guide SMEs through the onboarding journey. They struggle with catalog creation, compliance requirements, and ongoing operational support.
    - Opportunity: A robust, user-friendly self-onboarding tool can simplify processes such as catalog creation, GST verification, and product listing. SNPs can focus on high-value services like marketing and logistics instead of manual operations.
4. Recall Value:
    - Challenge: ONDC's brand recognition is higher than that of SNPs. Sellers are more likely to trust ONDC but face challenges in discovering SNPs for onboarding support. This mismatch hinders seller acquisition.
    - Opportunity: A direct onboarding platform branded under ONDC can bridge this trust gap and make SNPs facilitators of technical support, enhancing the seller journey without dependency.
5. Faster Reach to Market:

- Challenge: The dependence on SNPs slows the onboarding process, delaying sellers' entry into the digital marketplace.
- Opportunity: Unbundling the onboarding process from SNPs by providing sellers with a plug-and-play digital storefront reduces time to market, enabling sellers to focus on business growth.

Let's look at the problem statement from the lens of an SME:

Persona: Non-Tech-Savvy Tier 2/3/4 Seller

Name: Shyam

Background:

1. Age: 57
2. Gender: Male
3. Location: Small rural town in Haryana
4. Occupation: Small business owner of a Kirana Store

Demographics:

1. Shyam runs a small family-owned store that specialises in selling locally sourced agricultural products and handmade crafts. His store is well-known within his tight-knit community.
2. He has never ventured into the world of online selling before and relies heavily on local customers visiting his store in person.
3. Shyam owns a basic mobile phone for calls and text messages but is not comfortable with using it for complex tasks.
4. He has limited exposure to digital technology and the internet and lacks confidence in navigating online platforms.

Challenges:

1. Shyam lacks the technical skills and familiarity to list his products online. He has never created an online catalogue and finds the process daunting.
2. He is apprehensive about embracing e-commerce, fearing it might disrupt his traditional brick-and-mortar business.

Goals:

1. Shyam's primary goal is to expand his customer base and sales by entering the online market without compromising his physical store's reputation and customer base.
2. He wants to learn how to list his locally sourced agricultural products and handmade crafts online but needs a straightforward, step-by-step approach tailored to his limited digital literacy.

Needs and Pain Points:

1. Shyam needs a user-friendly platform or service that offers clear, step-by-step guidance for creating product listings.
2. Shyam runs his small-scale kirana store as multi-domain retailers, offering a diverse range of products, including fashion, electronics, and groceries, to cater to varied customer needs.
3. Shyam requires support and training resources that are specifically designed for individuals with limited digital literacy.
4. Shyam is concerned about online security and wants assurance that his personal and business information will be kept safe.

Hackathon Objective

Develop an intuitive, language-agnostic, and scalable self-onboarding platform for SMEs to create their digital storefronts (“E-Dukaan”) on the ONDC network. Your solution should address the following:

Expected Outcomes:

1. Seamless Onboarding Process:
    - Enable SMEs to onboard themselves with minimal guidance.
    - Automate steps like catalog creation using predefined templates or equivalent based on the seller’s domain.
2. User-Centric Design:
    - Focus on non-tech-savvy users like Shyam.
    - Provide visual, step-by-step guides and video tutorials.
    - Support multiple languages and offer offline modes for areas with low connectivity.
3. Security and Reliability:
    - Assure users of data privacy and secure transactions.

- Include a verification mechanism for catalog authenticity.

4. Open-Source Approach:
    - Build an open-source toolkit that can be adopted by SNPs and Digital Enablement Agencies (DEAs).
5. Sustainability and Scalability:
    - Design the platform to handle high volumes of users without compromising performance.
    - Ensure the solution is affordable and inclusive.
    - Ensure the solution solves for Kirana stores in the short term but also supports other domains/use cases in long term.

Problem Statement 4: Virtualisation of local market

Background

India boasts several prominent markets in various cities that cater to a diverse customer base with a wide range of items across numerous categories. Given that multiple shops often sell similar or complementary products, there is a unique opportunity to establish an aggregated virtual market warehouse. This initiative could effectively support the growing digital commerce landscape.

By transforming these traditional markets into seller platforms, we can create a comprehensive ecosystem for fulfilling digital commerce needs.

Here are some key principles of these marketplaces:

- **Limitless Inventory:** These markets can offer an extensive inventory that caters to both physical stores and virtual dark stores, ensuring a broad selection of products.
- **Order Aggregation:** Orders can be aggregated at the market association level, allowing for efficient fulfillment from local shops within the market. This not only streamlines operations but also enhances customer satisfaction through quicker delivery times.
- **SaaS-Based POS System:** Implementing a user-friendly Software as a Service (SaaS) Point of Sale (POS) system can facilitate the entire lifecycle of a digital commerce journey, making it easier for sellers to manage transactions and inventory.
- **Technology-Enhanced Operations:** Developing technologically advanced operational support is essential for creating a self-service model within these associations. This support will empower sellers to independently manage their operations while benefiting from shared resources.
- **Diverse Business Models:** A variety of business models can emerge from these marketplaces, expanding the reach of products from local markets to national and even global levels. This diversification can open up new revenue streams and enhance market competitiveness.

By leveraging these principles, we can effectively modernize traditional markets, turning them into vital hubs for digital commerce while preserving their rich cultural and community significance.

Hackathon Objective

Design and develop a **solution** that includes the following functionalities:

Onboarding

- Signup/Login Options
- Multi-Channel Notifications (Email, SMS, Whatsapp etc.)
- Notification Settings

KYC & Registration

- KYC and Profile Setup (GST, PAN etc.)

Inventory Management

- Catalogue Creation
- Bulk Upload
- Real-Time Updates
- Inventory Publishing (Time based release of inventory)
- Payment & Settlement report

Store Management

- Multi-Store Setup
- Order & Complaint Tracking

Catalog Management

- Real-Time Progress Monitoring
- Organize Catalogue

Reporting and Analytics

- Sales Reports
- Inventory Analytics
- Performance Metrics (Top Selling, Best Rated etc.)